

CLAIMS:

1. A communication method for a group communication, the method forming a predetermined cluster among a plurality of radio stations and selecting a cluster head managing the cluster, comprising the steps of:

operating one of the radio stations belonging to the cluster as a tentative cluster head;

determining the communication efficiency when the radio station becomes the tentative cluster head; and

selecting a cluster head in the cluster among the radio stations composing the cluster based on the determined communication efficiency.

2. The communication method according to claim 1, wherein the group communication is performed in a radio ad-hoc network of the master-slave configuration, wherein direct inter-slave communications are impossible.

3. The communication method according to claim 1, further comprising the steps of:

generating a schedule that determines an operation for circulating the radio stations as a tentative cluster head and an operation for the rest of each radio station composing the cluster to try to connect to the tentative cluster head; and

operating the radio stations composing the cluster synchronously based on the generated schedule.

4. The communication method according to claim 1, further comprising the steps of:

determining an operation to return to an original cluster configuration after operating as the tentative cluster head and a recovery operation when being unable to return to the original cluster configuration as a recovery schedule in advance; and

operating the radio stations composing the cluster synchronously based on the recovery schedule.

5. A radio ad-hoc network composing a cluster that is composed of a node of a cluster head and one or more nodes of cluster members, wherein

the node of the cluster head comprehends its own communication conditions with the nodes of the cluster members and generates a schedule for change of the cluster head based on the communication conditions and distributes the schedule to the nodes of the cluster members; and

the nodes of the cluster members comprehend their own communication conditions with the nodes composing the cluster based on the distributed schedule and send the communication conditions to the node of the cluster head.

6. The radio ad-hoc network according to claim 5, wherein the node of the cluster head determines whether or not to delegate its authority as a cluster head based on the communication conditions sent from the nodes of the cluster members; and if affirmative, tries to delegate its authority to appropriate nodes.

7. The radio ad-hoc network according to claim 6, wherein the node of the cluster head determines the time to return to an original cluster configuration where it continues to serve as a cluster head when failing to delegate its authority to the appropriate nodes.

8. A radio ad-hoc network composing a cluster that is composed of a node of a cluster head and one or more nodes of cluster members, wherein

the cluster head distributes a schedule that determines a circulation operation of a tentative cluster head on the cluster members that compose the cluster; and

the cluster members comprehend as a tentative cluster head their communication conditions with other nodes based on the distributed schedule and sends the communication conditions to the cluster head, wherein the cluster members can become a new cluster head based on the delegation of authority from the cluster head.

9. The radio ad-hoc network according to claim 8, wherein the cluster head distributes the schedule that determines the circulation operation immediately after configuring the cluster or when a node with a high error rate is detected.

10. A communication terminal that can be configured as one of a plurality of nodes composing a cluster as well as serve as a cluster head that allows communication with remaining nodes of cluster members, comprising:

means for comprehending communication conditions with the cluster members;

means for recognizing communication conditions with other nodes when the cluster member becomes a tentative cluster head; and

means for determining the delegation of cluster head to a specific node based on the comprehended communication conditions and the recognized communication conditions.

11. The communication terminal according to claim 10, wherein the means for comprehending communication conditions comprehends the communication conditions by sending test data to each cluster member and detecting a packet error rate.

12. The communication terminal according to claim 10, further comprising:

means for creating a schedule for circulating the cluster members in order as a tentative cluster head; and

means for distributing the created schedule to the cluster members.

13. The communication terminal according to claim 12, wherein the schedule determines time for circulating a tentative cluster head among the nodes to search for an appropriate cluster head candidate; time for each node to try to connect to the tentative cluster head; and a period for which the reconnection is to be repeated if the tried connection failed.

14. The communication terminal according to claim 12, wherein the means for creating a schedule creates the schedule when the means for comprehending communication conditions determines that there is a trouble with the communication conditions.

15. A communication terminal that can be configured as one of a plurality of nodes composing a cluster as well as serve as a cluster member that allows communication with other nodes of cluster head, comprising:

means for receiving a circulation schedule to determine an aptitude degree as a cluster head from the cluster head;

means for comprehending communication conditions with other nodes composing the cluster based on the received circulation schedule; and

means for sending the comprehended communication conditions to the cluster head.

16. A Bluetooth terminal that can be configured as one of a plurality of radio stations composing a piconet as well as manage a plurality of slaves as a master, comprising:

means for comprehending communication conditions with the plurality of slaves; and

means for delegating authority as a master to a predetermined slave composing the piconet to reconfigure the piconet if it is determined to be inappropriate as a master from the comprehended communication conditions.

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17. The Bluetooth terminal according to claim 16, further comprising:

means for creating a schedule for circulating the plurality of slaves composing the piconet in order as a tentative master; and

means for distributing the created schedule to the plurality of slaves.

18. The Bluetooth terminal according to claim 17, further comprising:

means for receiving communication conditions with other radio stations when circulating the plurality of slaves as a tentative master; and

means for determining to delegate authority as a master to the predetermined slave based on the received communication conditions.

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